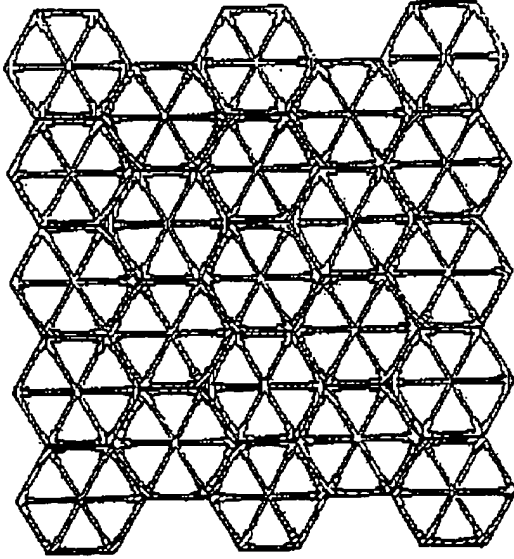


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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/BR89/00014 (22) International Filing Date: 15 December 1989 (15.12.89) (30) Priority data: 8807000 30 December 1988 (30.12.88) BR (71)(72) Applicant and Inventor: GRECHI PACHECO, Ricardo [BR/BR]; Rua João Castano, N° 186, 25610-Petrópolis, RJ (BR). (81) Designated States: AT (European patent), BE (European patent), CH (European patent), DE (European patent), ES (European patent), FR (European patent), GB (Euro- pean patent), IT (European patent), JP, LU (European patent), NL (European patent), SE (European patent), US.		Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
(54) Title: FLOATING MODULATE CONCRETE PLATFORM		
(57) Abstract Invention Patent Floating Modu- late Concrete Platform, refer it the con- ception of a floating platform constitut- ed by assemble of several hexagonal mo- dules with stiffness walls between oppo- site vertex, joined by prestressed cables in the enlargement spaces to do it. It fi- xation in operation place will be ob- tained filling the platform with water sea and helped by cables and anchors. The hexagonal modules will give the structu- ral stiffness and the water the necessary mass. The platform will can have a big work area and stay at some depth sea. 		

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REPORT DESCRIPTIVE OF PATENT INVENTION " FLOATING
MODULATE CONCRETE PLATFORM "

The present invention referred about a reinforced concrete platform, constitutive by several
5 modules in association, that after joined among themselves, will be create a plane surface, that would be used by platform oil exploration, base to extraction of minerals in depht sea, naval base, airport, etc..

It intend basicaly, to show how can conceived
10 and builtd a concret platform, like a artificial floating island, which utilities and aplications, will depend it economical viability. It consider, soon or later, there will be necessity explored marines riches, this invention is a possible alternative, that in
15 brasilian case off shore exploration oil could be utilized to depht water, greater than 500 meters.

The platform construction will be made by hexagonal modules width stiffness walls between opposite vertex. The modules will be constructed at the
20 coast and transported to point where it wish to have the platform location.

It understand by stiffines walls between oposite vertex, vertical walls that crossing all module were conected at it center.

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The figure 1 shows an horizontal cross section where can see the walls stiffness between opposite vertex.

The figure 2 shows the vertical cross section 5 in hexagonal module.

While some modules were constructed and transported to final position on the sea, they were going connected by prestressed tie-beams, in order to, soon after tensioned to confer whole the stiffness 10 necessary.

The figure 3 shows the module being transported.

The modules connection by prestressed tie-beams will be localized at edge enlargement space and 15 internal stiffness walls.

The figure 4 shows detail of prestressed tie-beams connection between modules.

Afterwards it has so great wish or necessary the modules will be partially filled with water sea, so 20 as to increase the platform greatest inertia, and so that, most economical.

The figure 5 shows the horizontal cross section platform.

The figure 6 shows a platform assembled by

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several modules.

Finally will be installed anchors that will be fix the platform in its work place.

Observe that the anchors installation is to help the platform fixation. Because the water sea in the platform is to increase the inertia, in this manner, to difficult the effects of waves displacements.

The anchors for platform will be concrete reinforced blocks will be arrested at platform by 10 cables.

The figure 7 shows the cross section where can see the fixation cables and the block to anchors.

There were many kinds platforms, some supported in bed sea, other were floating, also there are the floating platform fixed by cables. There are several platforms formed by assembly small modules too.

The new in this platform conception, is that, it is not fixed only by cables. How the platform can increase how much we want, its almost immobility will be reached by big mass obtained with filling up water sea.

Another new characteristic is the hexagonal modules conception with stiffened walls between opposite vertex. When they will be connected by prestressed, they were formed a set of beams crossing

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depth sea. The platforms supported by bed sea are limited by profundity, in tension leg platforms the tie-beams are tensioned to keep the platform in operation place, none takes its weight own to help in the fixedness, leaving for cables and anchors a small drag force because wave effects. How they are small a few cables will be necessary.

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CLAIMS

1 - "Floating Modulate Concrete Platform", it characterize by platform construction using hexagonal modules with stiffness walls between opposite vertex; by to have modules connected by prestressed cables, localized in enlargement space stiffness walls and modules faces, using some one prestressed system and, by obtainment inertia necessary to fix it, filling partially the modules interior water sea.

2 - "Floating Modulate Concrete Platform", according claim 1, it characterize by to be fixed in operation place because has a large inertia and helped by cables joined at anchors, to be contained a smaller part in the platform fixation. That is, the platform will has so big inertia that will remain a small force for cables and so there were fell cables.

3 - "Floating Modulate Concrete Platform", according claim 1, it characterize by big stiffness a whole set represented by beams that will be creat in the structure crossing at 60 degrees. The stiffness of a whole set is warranted by modules geometry. It being hexagonal, always allow to profile a stiffness wall and two lateral faces other modules and each union point. This situations also appear at 60 degrees between themselves, from that mode when the union cables will be prestressed, the hexagonal modules

- 7 -

vertex will compress between itself, to coming back the structure with isotropical stiffness and warranting a monolitical set.

4 - "Floating Modulate Concrete Platform",
5 according claims 1 and 2, it characterize by to stay fixed in the operation local because has big inertia and helped by cables and anchors.

5 - "Floating Modulate Concrete Platform",
according claims 1 and 3, it characterize by big
10 stiffness of whole set represented for it stiffness walls and for large homogeneity conferred union kind, that is, cross and prestressed.

6 - "Floating Modulate Concrete Platform",
according claims 1, 2, 3, 4 and 5 it characterize by
15 creation of a large distributed floating mass, so that the hydrodinamical forces had small efectes against it stiffness and mass.

7 - "Floating Modulate Concrete Platform",
according claim 1, characterize by fact to be
20 constructed of reinforced concrete modules at coast and shaped using prestressed concrete technical in definitive operation place.

8 - "Floating Modulate Concrete Platform",
according claims 1 and 3, though constitutive by
25 modules, characterized it, by possess a union that

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makes it a monolitical, can be considered like single whole after mounted.

9 - "Floating Modulate Concrete Platform", according claim 1, characterize by utilization of 5 reduces thickness walls, that work like plates under water sea pressure. The walls will be dimensioned using thin plate theory because filling the modules with sea water the internal pressure alleviate the external, this is other motive to fill the modules: to make the 10 structure to get hydrostatical forces with usual dimensions in theory of structures.

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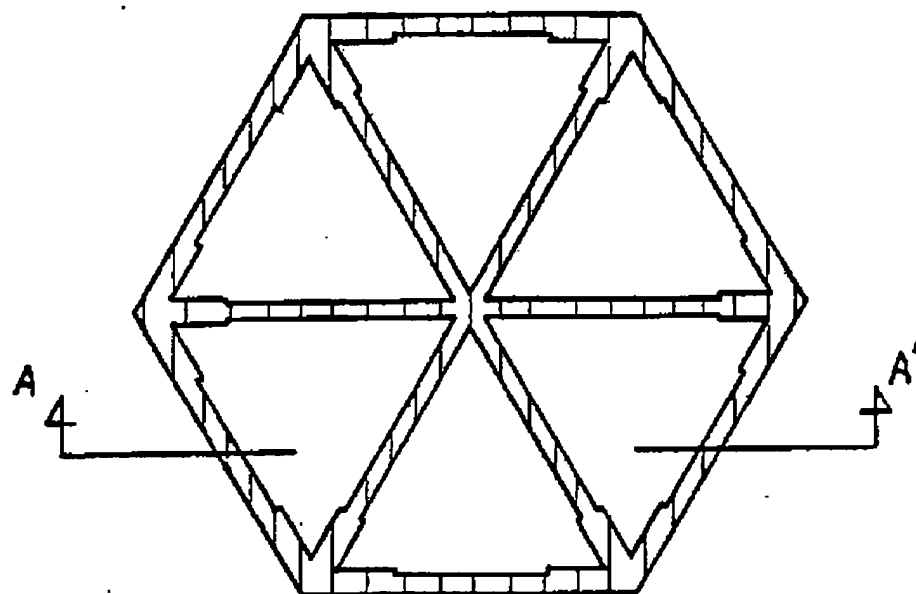


FIG. 1

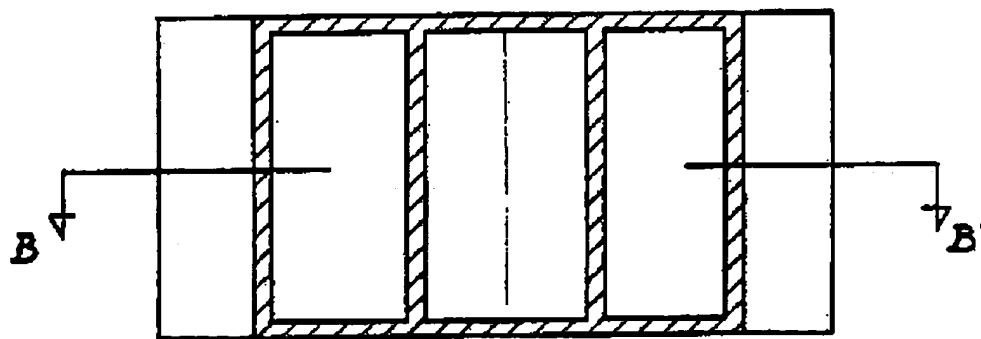


FIG. 2

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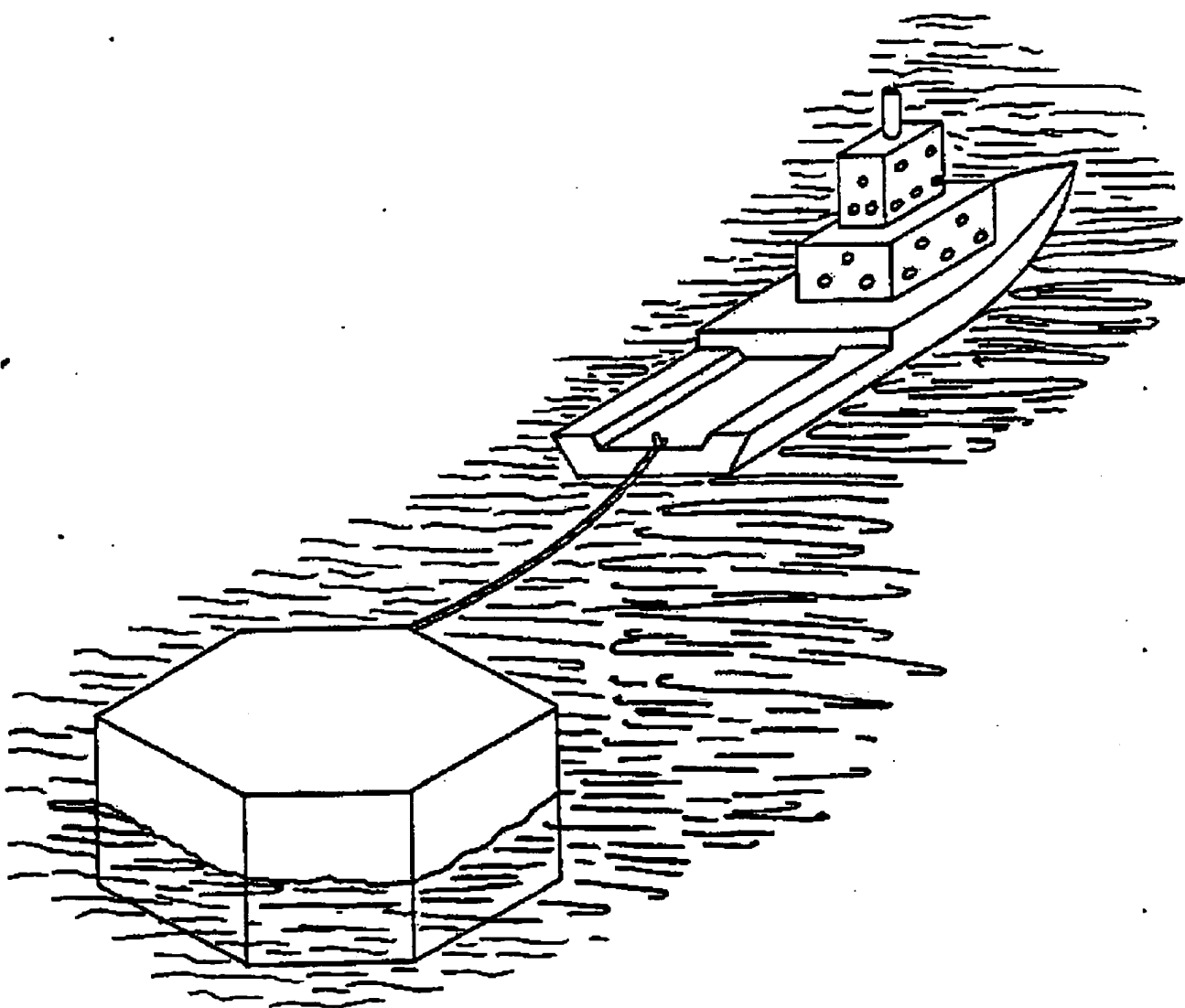


FIG. 3

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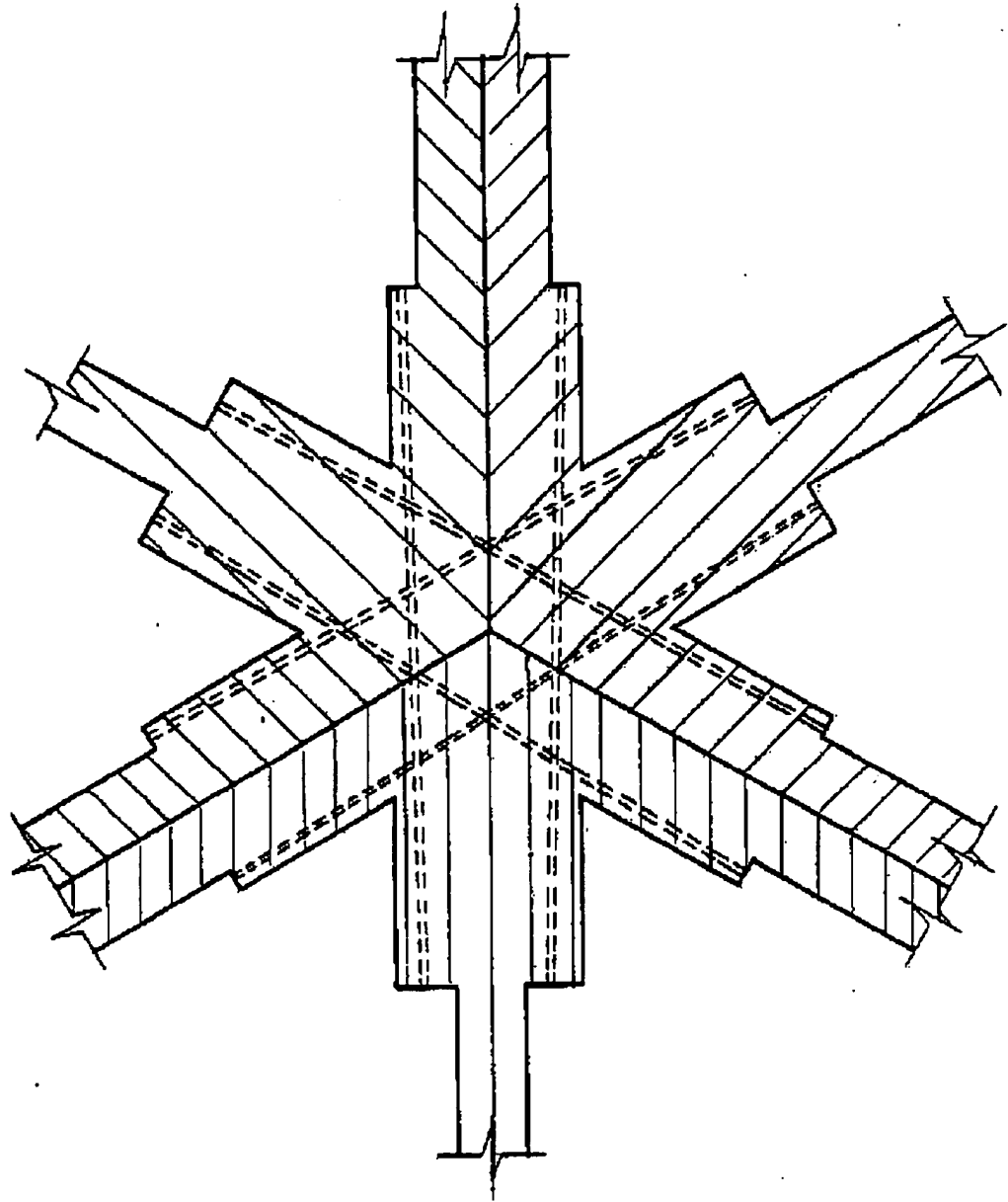


FIG. 4

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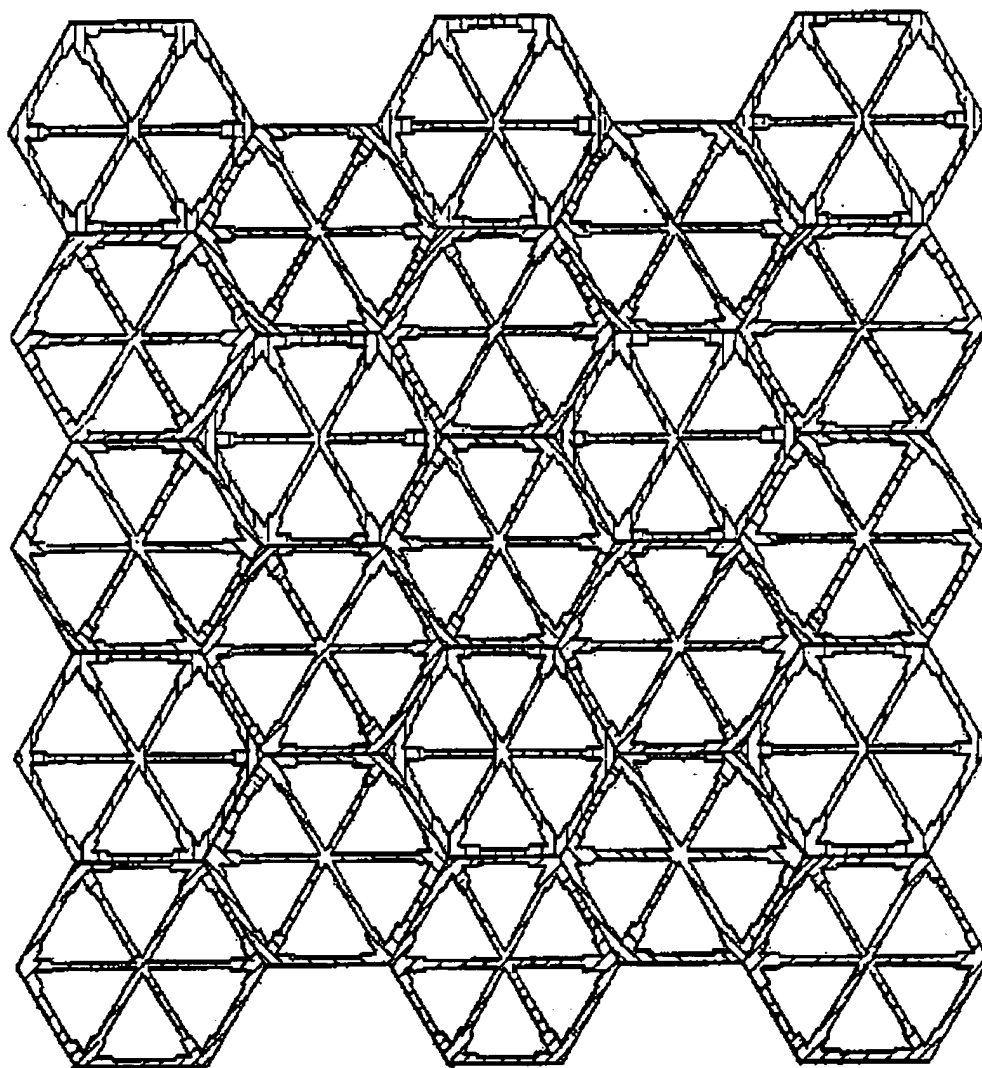


FIG. 5

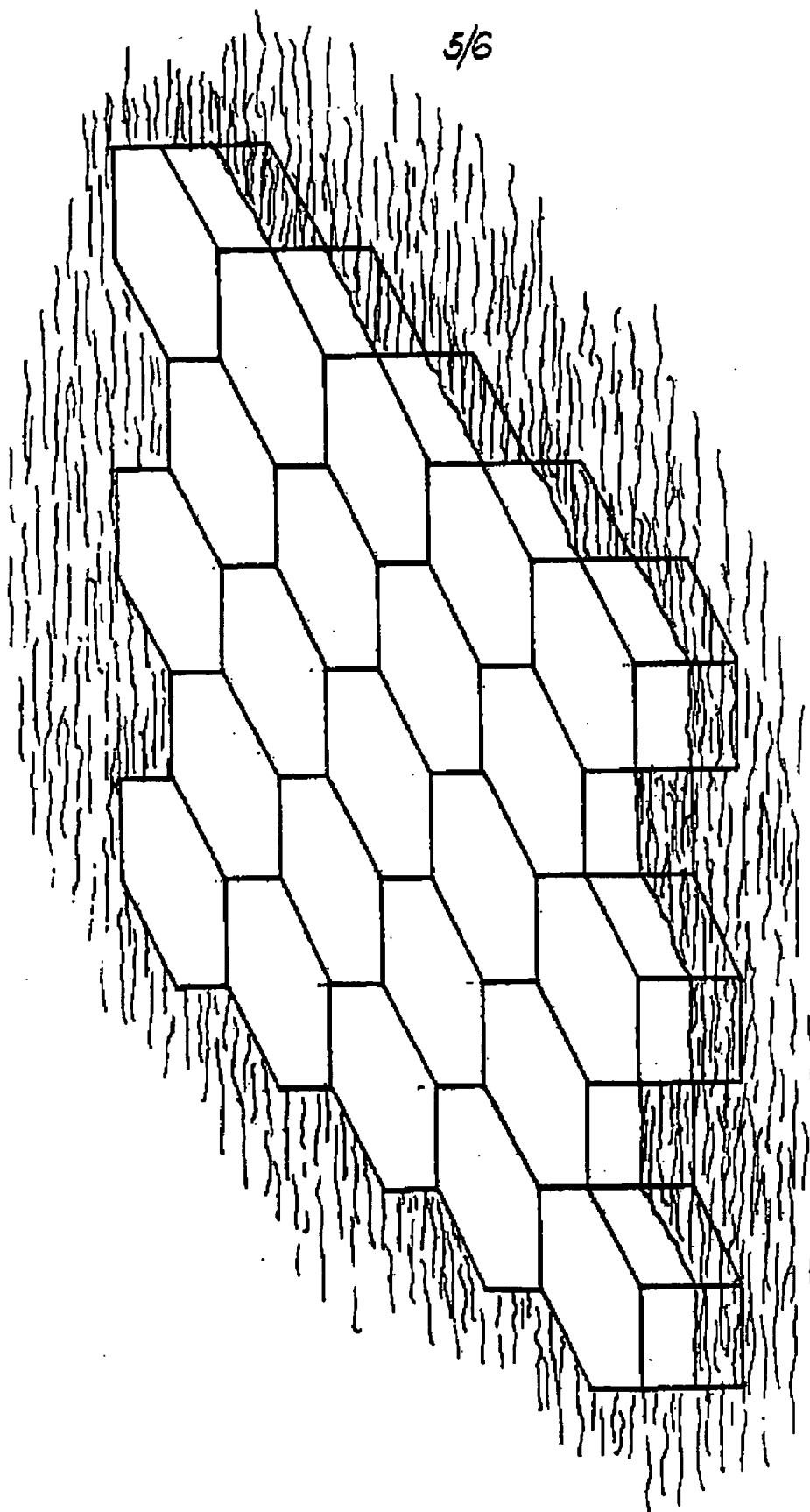


FIG. 6

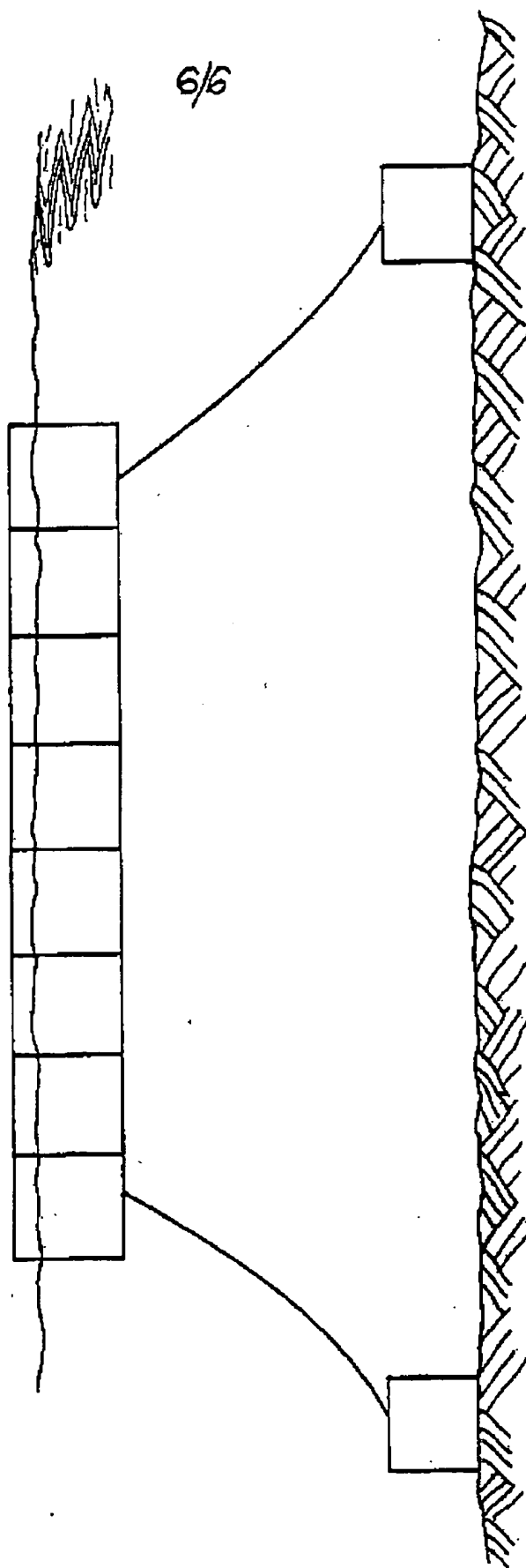


FIG. 7

INTERNATIONAL SEARCH REPORT

International Application No. **PGI/BR89/00014**

I. CLASSIFICATION OF SUBJECT MATTER (of several classification symbols apply, indicate all)

According to International Patent Classification (IPC) or to both National Classification and IPC

INT. CL.(5): B63B 35/44

U.S. CL.: 114/266

II. FIELDS SEARCHED

Minimum Documentation Searched

Classification System	Classification Symbols
U.S.	114/65A, 263, 264, 266, 267 52/79.9, 608, Dig. 10

Documentation Searched other than Minimum Documentation
to the extent that such documents are included in the fields searched

III. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No. 1
X	US, A, 3,490,407, (DEMPSTER) 20 January 1970, column 4, lines 53-63	1,7,9
A	US, A, 3,665,882, (GEORGIEV ET AL.) 30 May 1972	
A	US, A, 3,951,085, (JOHNSON ET AL.) 20 April 1976	
A	US, A, 3,974,789, (De GROOT) 17 August 1976	
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IV. CERTIFICATION

Date of the Actual Completion of the International Search

Date of Mailing of this International Search Report

17 APRIL 1990

29 MAY 1990

International Searching Authority

Signature of Authorized Officer

ISA/US

JESUS D. SOTELO

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